

4 ALBERT EMBANKMENT  
LONDON SE1 7SR  
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

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22 February 2012

**INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974**

**Equivalent arrangement accepted under regulation I/5**

**Floodable length curves for ro-ro passenger ships  
with long lower hold or similar spaces**

**Communication by the Government of Italy**

The Secretary-General of the International Maritime Organization has the honour to transmit herewith the text of a communication by the Government of Italy in respect of the Procedure for the calculation of the floodable length curves for ro-ro passenger ships provided with long lower hold or similar spaces in accordance with SOLAS regulations II-1/4 to 7, accepted under regulation I/5 of the above Convention.

The Secretary-General would be grateful if steps could be taken to bring this information to the attention of the appropriate authorities.

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Rome, 26<sup>th</sup> January 2012

**Ministry Infrastructure and  
Transport**

**Italian Coastguard Headquarters**  
Safety of Navigation Department

To **International Maritime Organization**

4 Albert Embankment

London SE1 7SR

For attention of The Secretary General

Our reference n. 7767 dated 26<sup>th</sup> January 2012

Lt (ITCG) D. Capobianco  
Capt (ITCG) L. Giardino

Info to Radm (ITCG) Cristiano Aliperta  
Italian Alternate Permanent  
Representative to the IMO  
Embassy of Italy in the United Kingdom  
14, three kings yard  
London (UK) W1K-4EH

Tel. +390645489255

Fax 06.96.51.99.19

E-mail: [daniele.capobianco@mit.gov.it](mailto:daniele.capobianco@mit.gov.it);  
[luigi.giardino@mit.gov.it](mailto:luigi.giardino@mit.gov.it);

**Procedure for the calculation of the floodable length curves for ro-ro passenger ships provided with long lower hold or similar spaces in accordance with SOLAS Ch II-1 Part B Regulations 4-7 – Equivalence under SOLAS Ch I Part A Regulation 5 -**

Dear Sir,

We hereby refer to the procedure for calculating the floodable length curves for ro-ro passenger ship fitted with long inboard spaces extending longitudinally over more than two transverse watertight boundaries and lying inboard of the hypothetical B/5 line of side damage penetration, such as a long lower hold (in the following indicated as LLH) or an engine room (ER) or other similar spaces.

It has been noted that some Administration, thought the instrument of the "equivalence" as per regulation I/5 of SOLAS '74 as amended, have informed the International Maritime Organization on the approach they adopt for calculating aforesaid curves.

From such communications it may be deduced that there is no harmonized and consistent approach on the matter.

Therefore, this Administration has deemed useful to use the same instrument (i.e. the "equivalence" according to regulation I/5 of SOLAS '74 as amended) to inform all the Contracting Governments on its approach on the matter.

The method adopted is fully described in the Annex to this letter.

This Administration is convinced that such a method represents the correct approach for the calculation of the floodable length curves of ro-ro passenger ships with LLH or similar inboard spaces protected by B/5 bulkheads in accordance with SOLAS '74 as amended Ch II-1 Part B Regulations 4-7.

It is underlined that, so far, more than 60 vessels have been approved in accordance with the described method, which is thereby respectfully submitted, as anticipated above, in accordance with the provision of SOLAS' 74 as amended Chapter I Part A Regulation 5.

Your faithfully,

The Head of the Safety Navigation  
Department  
Captain (ITCG) Nicola CARLONE



**MINISTRY OF INFRASTRUCTURE AND TRANSPORT  
ITALIAN COAST GUARD HEADQUARTERS**

**ANNEX to the letter prot. No. 7767 dated 26<sup>th</sup> January 2012**

**PROCEDURE FOR THE CALCULATION OF THE FLOODABLE LENGTH CURVES FOR  
RO-RO PASSENGER SHIPS PROVIDED WITH LONG LOWER HOLD OR SIMILAR  
SPACES IN ACCORDANCE WITH SOLAS CH II-1 PART B REGULATIONS 4-7**

**Equivalence under SOLAS Ch I Part A Regulation 5**

- 1) Regulation II-1/7.8 of SOLAS Convention in force up to 31st December 2008 states that:

*"Where a main transverse watertight compartment contains local subdivision and it can be shown to the satisfaction of the Administration that, after any assumed side damage extending over a length of 3,0 m plus 3% of the length of the ship, or 11,0 m, whichever is the less (in the following named as "the standard longitudinal extent of damage") the whole volume of the main compartment will not be flooded, a proportionate allowance may be made in the permissible length otherwise required for such compartment...."*

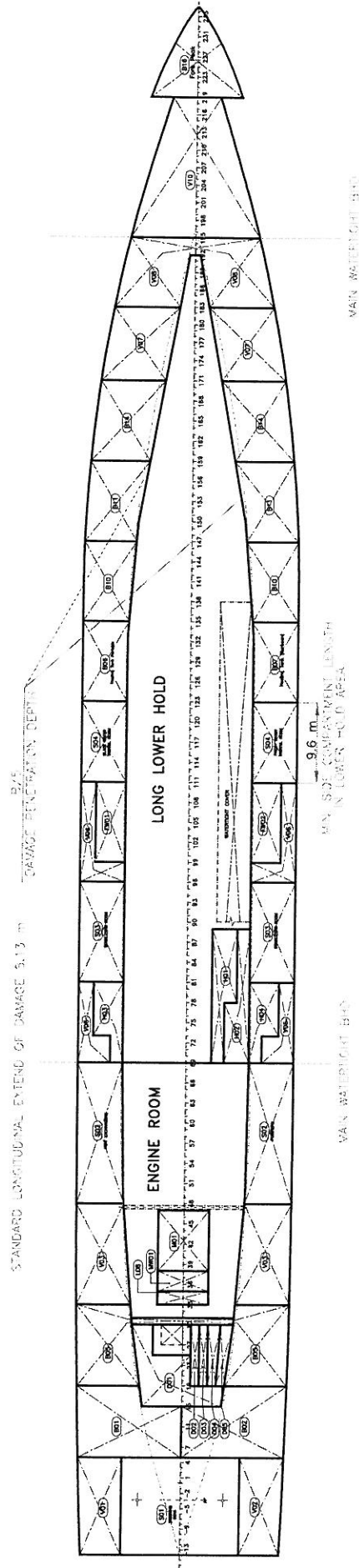
- 2) Taking into account a ro-ro passenger ship provided with Long Lower Hold (LLH) (attachment 1):

- the parts of it in way of the LLH or other similar spaces are considered separately - as a single main transverse compartment - because included between two main complete transverse watertight bulkheads; and
- these parts contain also a local subdivision which means longitudinal bulkheads (positioned inside more than the damage penetration depth  $B/5$  – see the attachment) and partial transverse bulkheads (positioned at a longitudinal distance greater than the standard longitudinal extent of damage between each other. For the ship indicated in the attachment the standard longitudinal extent of damage is 8,13 m);

- 3) On the above:

- Permeabilities are in general calculated according to Regulation II-1/5;
- For LLH compartment or similar spaces which contain a local subdivision, specific permeability is calculated as follows: maximum flooded volume within the LLH compartment (i.e. the volume of the largest couple of adjacent compartments which may be flooded within the standard longitudinal extent of damage) divided by the volume of the compartment under consideration.

- 4) Furthermore, Regulation II-1/7.8 states that..... *"the volume of effective buoyancy on the undamaged side is not greater than that assumed on the damaged side"*. In calculating the above-mentioned flooded volume, the flooding considered on the damaged side is reflected also on the undamaged side satisfying, in so doing, the requirement of Regulation II-1/7.8 (attachment 2).
- 5) The floodable length limiting curves are:
- in general calculated using the permeabilities as per Regulation II-1/5; otherwise
  - In way of the LLH compartment, or similar spaces, the floodable length limiting curves are corrected on the basis of the specific permeability calculated in accordance with the procedure outlined above (in practice, they are raised). Against these new curves, the triangles drawn by the extremities of the LLH compartment, or similar spaces, are verified and each triangle has to lie below the relevant curve.
- 6) Similar corrections and checks are carried out in case of a two-compartment standard ship. In this case, when the two contiguous compartments are represented, for example, by the ER (aft) and the LLH (forward), for the purpose of verifying the relevant floodable length a permeability is assigned to such couple of compartments which is the mean average permeability of the two portions of the ship, as permitted by Reg. II-1/7.2.2.
- 7) Analogous procedure is adopted for any other couple of compartments taken under consideration.





Via Udine, 15  
34132 TRIESTE  
ITALY  
Phone: +39 040 411241  
Fax: +39 040 410329  
mail@naos-design.com  
www.naos-design.com

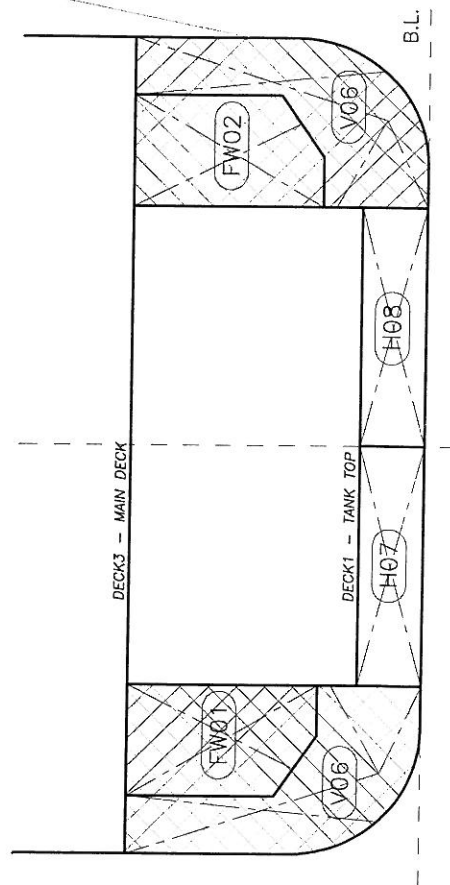
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## RO-PAX attachment 2

DATE	BUILDER	SHEET/SHEETS
NAOS PROJ. N°	BUILD N°	SCALE

DAMAGE SIDE

FR.106



FLOODED COMPARTMENTS  
FOR FLOODABLE LENGTH  
CALCULATION PURPOSES

